

SEQUENCE LISTING

<110> Bayer BioScience N.V.
D'Halluin, Kathleen
Vanderstraeten, Chantal
Ruiter, Rene

<120> Improved targeted DNA insertion in plants

<130> BCS 03-2007 WO1

<150> EP 03078700.6

<151> 2003-11-18

<160> 7

<170> PatentIn version 3.0

<210> 1

<211> 244

<212> PRT

<213> *Saccharomyces cerevisiae*

<400> 1

```

Met Ala Lys Pro Pro Lys Lys Lys Arg Lys Val Asn Ile Lys Lys Asn
1          5          10          15
Gln Val Met Asn Leu Gly Pro Asn Ser Lys Leu Leu Lys Glu Tyr Lys
          20          25          30
Ser Gln Leu Ile Glu Leu Asn Ile Glu Gln Phe Glu Ala Gly Ile Gly
          35          40          45
Leu Ile Leu Gly Asp Ala Tyr Ile Arg Ser Arg Asp Glu Gly Lys Thr
          50          55          60
Tyr Cys Met Gln Phe Glu Trp Lys Asn Lys Ala Tyr Met Asp His Val
65          70          75          80
Cys Leu Leu Tyr Asp Gln Trp Val Leu Ser Pro Pro His Lys Lys Glu
          85          90          95
Arg Val Asn His Leu Gly Asn Leu Val Ile Thr Trp Gly Ala Gln Thr
          100          105          110
Phe Lys His Gln Ala Phe Asn Lys Leu Ala Asn Leu Phe Ile Val Asn
          115          120          125
Asn Lys Lys Thr Ile Pro Asn Asn Leu Val Glu Asn Tyr Leu Thr Pro
          130          135          140
Met Ser Leu Ala Tyr Trp Phe Met Asp Asp Gly Gly Lys Trp Asp Tyr
145          150          155          160
Asn Lys Asn Ser Thr Asn Lys Ser Ile Val Leu Asn Thr Gln Ser Phe
          165          170          175

```

Thr Phe Glu Glu Val Glu Tyr Leu Val Lys Gly Leu Arg Asn Lys Phe
180 185 190
Gln Leu Asn Cys Tyr Val Lys Ile Asn Lys Asn Lys Pro Ile Ile Tyr
195 200 205
Ile Asp Ser Met Ser Tyr Leu Ile Phe Tyr Asn Leu Ile Lys Pro Tyr
210 215 220
Leu Ile Pro Gln Met Met Tyr Lys Leu Pro Asn Thr Ile Ser Ser Glu
225 230 235 240
Thr Phe Leu Lys

<210> 2
<211> 732
<212> DNA
<213> Artificial

<220>
<223> synthetic DNA sequence encoding I-SceI (UIPAC code)

<220>
<221> misc_feature
<222> (6)..(6)
<223> N=A,G,C or T

<220>
<221> variation
<222> (25)..(27)
<223> AGR

<220>
<221> variation
<222> (61)..(63)
<223> TTR

<220>
<221> variation
<222> (73)..(75)
<223> AGY

<220>
<221> variation
<222> (79)..(81)
<223> TTR

<220>
<221> variation
<222> (82)..(84)

<223> TTR

<220>

<221> variation

<222> (97)..(99)

<223> AGY

<220>

<221> variation

<222> (103)..(105)

<223> TTR

<220>

<221> variation

<222> (112)..(114)

<223> TTR

<220>

<221> variation

<222> (145)..(147)

<223> TTR

<220>

<221> variation

<222> (151)..(153)

<223> TTR

<220>

<221> variation

<222> (169)..(171)

<223> AGR

<220>

<221> variation

<222> (172)..(174)

<223> AGY

<220>

<221> variation

<222> (175)..(177)

<223> AGR

<220>

<221> variation

<222> (244)..(246)

<223> TTR

<220>
<221> variation
<222> (247)..(249)
<223> TTR

<220>
<221> variation
<222> (265)..(267)
<223> TTR

<220>
<221> variation
<222> (268)..(270)
<223> AGY

<220>
<221> variation
<222> (289)..(291)
<223> AGR

<220>
<221> variation
<222> (301)..(303)
<223> TTR

<220>
<221> variation
<222> (310)..(312)
<223> TTR

<220>
<221> variation
<222> (361)..(363)
<223> TTR

<220>
<221> variation
<222> (370)..(372)
<223> TTR

<220>
<221> variation
<222> (409)..(411)
<223> TTR

<220>
<221> variation
<222> (424)..(426)

<223> TTR

<220>

<221> variation

<222> (436)..(438)

<223> AGY

<220>

<221> variation

<222> (439)..(441)

<223> TTR

<220>

<221> variation

<222> (490)..(492)

<223> AGY

<220>

<221> variation

<222> (502)..(504)

<223> AGY

<220>

<221> variation

<222> (511)..(513)

<223> TTR

<220>

<221> variation

<222> (523)..(525)

<223> AGY

<220>

<221> variation

<222> (550)..(552)

<223> TTR

<220>

<221> variation

<222> (562)..(564)

<223> TTR

<220>

<221> variation

<222> (565)..(567)

<223> AGR

<220>
<221> variation
<222> (580)..(582)
<223> TTR

<220>
<221> variation
<222> (631)..(633)
<223> AGY

<220>
<221> variation
<222> (637)..(639)
<223> AGY

<220>
<221> variation
<222> (643)..(645)
<223> TTR

<220>
<221> variation
<222> (658)..(660)
<223> TTR

<220>
<221> variation
<222> (673)..(675)
<223> TTR

<220>
<221> variation
<222> (697)..(699)
<223> TTR

<220>
<221> variation
<222> (712)..(714)
<223> AGY

<220>
<221> variation
<222> (715)..(717)
<223> AGY

<220>
<221> variation
<222> (727)..(729)

<223> TTR

<220>

<221> misc_feature

<222> (12)..(12)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (15)..(15)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (27)..(27)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (33)..(33)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (54)..(54)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (63)..(63)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (66)..(66)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (69)..(69)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (75)..(75)

<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (81)..(81)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (84)..(84)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (99)..(99)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (105)..(105)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (114)..(114)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (135)..(135)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (138)..(138)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (144)..(144)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (147)..(147)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (153)..(153)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (156)..(156)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (162)..(162)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (171)..(171)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (174)..(174)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (177)..(177)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (186)..(186)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (192)..(192)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (225)..(225)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (240)..(240)

<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (246)..(246)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (249)..(249)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (264)..(264)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (267)..(267)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (270)..(270)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (273)..(273)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (276)..(276)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (291)..(291)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (294)..(294)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (303)..(303)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (306)..(306)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (312)..(312)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (315)..(315)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (321)..(321)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (327)..(327)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (330)..(330)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (336)..(336)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (351)..(351)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (363)..(363)

<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (366)..(366)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (372)..(372)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (381)..(381)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (396)..(396)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (402)..(402)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (411)..(411)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (414)..(414)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (426)..(426)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (429)..(429)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (432)..(432)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (438)..(438)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (441)..(441)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (444)..(444)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (465)..(465)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (468)..(468)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (492)..(492)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (495)..(495)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (504)..(504)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (510)..(510)

<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (513)..(513)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (519)..(519)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (525)..(525)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (531)..(531)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (543)..(543)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (552)..(552)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (552)..(552)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (555)..(555)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (561)..(561)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (564)..(564)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (567)..(567)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (582)..(582)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (594)..(594)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (615)..(615)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (633)..(633)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (639)..(639)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (645)..(645)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (660)..(660)

<223> N = A, G, C or T

<220>

<221> misc_feature

<222> (669)..(669)

<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (675)..(675)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (681)..(681)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (699)..(699)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (702)..(702)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (708)..(708)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (714)..(714)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (717)..(717)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (723)..(723)
<223> N = A, G, C or T

<220>
<221> misc_feature
<222> (729)..(729)
<223> N = A, G, C or T

<400> 2
atggcnaarc cncocnaaraa raarcgnaar gtnaayatha araaraayca rgtnatgaay

60


```

ctnggncna aytcaarct nctnaargar tayaartcnc arctnathga rctnaayath 120
garcarttyg argcnggnat hggncnath ctnggngayg cntayathcg ntcncngay 180
garggnaara cntaytgyat gcarttygar tggaaraaya argcntayat ggaycaygtn 240
tgyctnctnt aygaycartg ggtncntnctn ccncncaya araargarcg ngtnaaycay 300
ctnggnaayc tngtnathac ntggggngcn caracnttya arcaycargc nttyaayaar 360
ctngcnaayc tnttyathgt naayaayaar aaracnathc cnaayaayct ngtngaraay 420
tayctnacnc cnatgtcnct ngcntaytgg ttyatggayg ayggnggnaa rtgggaytay 480
aayaaraayt cnacnaayaa rtcnathgtn ctnaayacnc artcnttyac nttygargar 540
gtngartayc tngtnaargg nctncgnaay aarttycarc tnaaytgyta ygtnaarath 600
aayaaraaya arccnathat htayathgay tcnatgtcnt ayctnathtt ytayaayctn 660
athaarcnt ayctnathcc ncaratgatg tayaarctnc cnaayacnat htcntcngar 720
acnttyctna ar 732

```

```

<210> 3
<211> 732
<212> DNA
<213> Artificial

```

```

<220>
<223> preferred synthetic DNA sequence encoding I-SceI (UIPAC code)

```

```

<220>
<221> variation
<222> (25)..(27)
<223> AGA

```

```

<220>
<221> variation
<222> (73)..(75)
<223> AGC

```

```

<220>
<221> variation
<222> (97)..(99)
<223> AGC

```

```

<220>
<221> variation
<222> (169)..(171)
<223> AGA

```

<220>
<221> variation
<222> (172)..(174)
<223> AGC

<220>
<221> variation
<222> (175)..(177)
<223> AGA

<220>
<221> variation
<222> (268)..(270)
<223> AGC

<220>
<221> variation
<222> (289)..(291)
<223> AGA

<220>
<221> variation
<222> (436)..(438)
<223> AGC

<220>
<221> variation
<222> (490)..(492)
<223> AGC

<220>
<221> variation
<222> (502)..(504)
<223> AGC

<220>
<221> variation
<222> (523)..(525)
<223> AGC

<220>
<221> variation
<222> (565)..(567)
<223> AGA

<220>
<221> variation
<222> (631)..(633)

<223> AGC

<220>

<221> variation

<222> (637)..(639)

<223> AGC

<220>

<221> variation

<222> (712)..(714)

<223> AGC

<220>

<221> variation

<222> (715)..(717)

<223> AGC

<400> 3

atggcyaarc chcchaaraa raarcgsaaa gtsaacatya araaraacca ggtsatgaac	60
ctsggmcccha actcmaarct sctsaargag tacaartcmc arctsatyga rctsaacaty	120
garcarttcg argcyggmat cggmctsaty ctsggmgayg cytacatycg stcmcgsgay	180
garggmaara cytactgyat gcagttcgar tggaaraaca argcytacat ggaycaygts	240
tgycstctst acgaycartg ggtsctstcm cchcchcaya araargarcg sgtsaaccay	300
ctsggmaacc tsqtsatyac ytggggmgy caracyttca arcaycargc yttcaacaar	360
ctsgcsaacc tstitcatyct saacaacaar aaracyatyc chaacaacct sgtsgaraac	420
tacctsacyc cyatgtcmct sgcytactgg ttcattggayg ayggmggmaa rtgggdaytac	480
aacaaraact cmacyaaca rctmatygtc tsaacacyc artcmittcac yttcgargar	540
gtsgartacc tsqtsaargg mctscgsaac aarttccarc tsaactgyta cgtsaagaty	600
aacaaraaca arccyatyat ctacatygay tcmattgcm acctsatytt ctacaaccts	660
atyaarccht acctsatycc hcaratgatg tacaartsc chaacacyat ytcmtcmgar	720
acyttcctsa ar	732

<210> 4

<211> 732

<212> DNA

<213> Artificial

<220>

<223> preferred synthetic DNA sequence encoding I-SceI (UIPAC code)

```

<400> 4
atggccaagc ctccaagaa gaagcgcaaa gtgaacatca agaagaacca ggtgatgaac      60
ctgggaccta acagcaagct cctgaaggag tacaagagcc agctgatcga actgaacatc      120
gagcagttcg aagctggcat cggcctgata ctgggcgatg cctacatcag atcccgggac      180
gaaggcaaga cctactgcat gcagttcgag tggaagaaca aggcctacat ggaccacgtg      240
tgtctgctgt acgaccagtg ggtcctgagc cctcctcaca agaaggagcg cgtgaaccat      300
ctgggcaacc tcgtgatcac ctggggagcc cagaccttca agcaccagga cttcaacaag      360
ctggccaacc tgttcacgtg gaacaacaag aagaccatcc ccaacaacct cgtggagaac      420
tacctcactc ccatgagcct ggcctactgg ttcattggagc acggaggcaa gtgggactac      480
aacaagaaca gcaccaacaa gtcaattgtg ctgaacaccc aaagcttcac cttcgaagaa      540
gtggagtacc tcgtcaaggc cctgcgcaac aagttccagc tgaactgcta cgtgaagatc      600
aacaagaaca agcctatcat ctacatcgac agcatgagct acctgatctt ctacaacctg      660
atcaagccat acctgatccc tcagatgatg tacaagctgc ccaacaccat cagcagcgag      720
accttcctga ag                                         732

```

```

<210> 5
<211> 3262
<212> DNA
<213> Artificial

```

```

<220>
<223> T-DNA of pTTAM78 (target locus)

```

```

<220>
<221> misc_feature
<222> (1)..(25)
<223> Right T-DNA border sequence

```

```

<220>
<221> misc_feature
<222> (26)..(72)
<223> synthetic polylinker sequence

```

```

<220>
<221> misc_feature
<222> (73)..(333)
<223> 3' nos (complement)

```

```

<220>
<221> misc_feature
<222> (334)..(351)

```

<223> synthetic polylinker sequence

<220>

<221> misc_feature

<222> (352)..(903)

<223> bar sequence (complement)

<220>

<221> misc_feature

<222> (904)..(928)

<223> synthetic polylinker sequence

<220>

<221> misc_feature

<222> (929)..(946)

<223> I-SceI recognition site

<220>

<221> misc_feature

<222> (947)..(967)

<223> synthetic polylinker sequence

<220>

<221> misc_feature

<222> (968)..(1171)

<223> 3'g7

<220>

<221> misc_feature

<222> (1172)..(1290)

<223> synthetic polylinker sequence

<220>

<221> misc_feature

<222> (1291)..(1577)

<223> promoter nopaline synthetase gene

<220>

<221> misc_feature

<222> (1578)..(1590)

<223> synthetic polylinker sequence

<220>

<221> misc_feature

<222> (1591)..(2394)

<223> nptII

<220>
 <221> misc_feature
 <222> (2395)..(2567)
 <223> 3' neo

<220>
 <221> misc_feature
 <222> (2568)..(3183)
 <223> 3' ocs

<220>
 <221> misc_feature
 <222> (3184)..(3234)
 <223> synthetic polylinker sequence

<220>
 <221> misc_feature
 <222> (3235)..(3262)
 <223> left T-DNA border sequence

<400> 5
 aattacaacg gtatatatcc tgccagtact cggccgctcga cctgcaggca attggtacct 60
 agaggatcctt cccgatctag taacatagat gacaccgcgc gcgataattt atcctagttt 120
 gcgcgctata ttttgttttc tatcgcgat taaatgtata attgcgggac tctaatacata 180
 aaaacccatc tcataaataa cgtcatgcat tacatgttaa ttattacatg cttaacgtaa 240
 ttcaacagaa attatatgat aatcatcgca agaccggcaa caggattcaa tcttaagaaa 300
 ctttattgcc aaatgtttga acgatctgct tcggatccta gacgcgtgag atcagatctc 360
 ggtgacgggc aggaccggac ggggcggtac cggcaggctg aagtcagct gccagaaacc 420
 cacgtcatgc cagttcccgt gcttgaagcc ggccgccgc agcatgccgc ggggggcata 480
 tccgagcgcc tcgtgcatgc gcacgctcgg gtcgttgggc agcccgatga cagcgaccac 540
 gctcttgaag ccctgtgcct ccagggactt cagcagggtg gtgtagagcg tggagcccag 600
 tcccgtccgc tgggtggcggg gggagacgta cacggctcgac tcggccgtcc agtcgtaggc 660
 gttgcgtgcc ttccaggggc ccgcgtaggc gatgccggcg acctcgccgt ccacctcggc 720
 gacgagccag ggatagcgct cccgcagacg gacgaggctg tccgtccact cctgcggttc 780
 ctgcggtctg gtacggaagt tgaccgtgct tgtctcgatg tagtggttga cgatggtgca 840
 gaccgccggc atgtccgcct cgggtggcacg gcggatgtcg gccgggcgtc gttctgggtc 900
 catggttata gagagagaga tagatttaat taccctgtta tccctaggcc gctgtacagg 960

gcccgggatc ttgaaagaaa tatagtttaa atatttattg ataaaataac aagtcaggta 1020
 ttatagtcca agcaaaaaca taaatttatt gatgcaagtt taaattcaga aatatttcaa 1080
 taactgatta tatcagctgg tacattgccg tagatgaaag actgagtgcg atattatgtg 1140
 taatacataa attgatgata tagctagctt aggcgcgcc a tagatcccgt caattctcac 1200
 tcattaggca cccagggctt tacactttat gcttccggct cgtataatgt gtggaattgt 1260
 gagcggataa caatttcaca caggaaacag gatcatgagc ggagaattaa gggagtcacg 1320
 ttatgacccc cgccgatgac gcgggacaag ccgttttacg tttggaactg acagaaccgc 1380
 aacgattgaa ggagccactc agccgcgggt ttctggagtt taatgagcta agcacatacg 1440
 tcagaaacca ttattgcgcg ttcaaaagtc gcctaaggtc actatcagct agcaaatatt 1500
 tcttgtcaaa aatgctccac tgacgttcca taaattcccc tcggtatcca attagagtct 1560
 catattcact ctcaatcaaa gatccggccc atgatcatgt ggattgaaca agatggattg 1620
 cacgcagggt ctccggccgc ttgggtggag aggctattcg gctatgactg ggcacaacag 1680
 acaatcggct gctctgatgc cgccgtgttc cggtgtcag cgcaggggcg cccggttctt 1740
 tttgtcaaga ccgacctgtc cggtgccctg aatgaactgc aggacgaggc agcgcggcta 1800
 tcgtggctgg ccacgacggg cgttccttgc gcagctgtgc tcgacgttgt cactgaagcg 1860
 ggaagggact ggctgctatt gggcgaagtg ccggggcagg atctcctgtc atctcacctt 1920
 gctcctgccg agaaagtatc catcatggct gatgcaatgc ggcggctgca tacgcttgat 1980
 ccggctacct gccattcga ccaccaagcg aaacatcgca tcgagcgagc acgtactcgg 2040
 atggaagccg gtcttgtcga tcaggatgat ctggacgaag agcatcaggg gctcgcgcca 2100
 gccgaactgt tcgccaggct caaggcgcgc atgccgcagc gcgaggatct cgtcgtgacc 2160
 catggcgatg cctgcttgcc gaatatcatg gtggaaaatg gccgcttttc tggattcatc 2220
 gactgtggcc ggctgggtgt ggcggaccgc tatcaggaca tagcgttggc taccogtgat 2280
 attgctgaag agcttggcgg cgaatgggct gaccgcttcc tcgtgcttta cggtatcgcc 2340
 gctcccatt cgacgcgat cgccttctat cgccttcttg acgagttctt ctgagcggga 2400
 ctctgggggt cgaaatgacc gaccaagcga cgcccaacct gccatcacga gatttcgatt 2460
 ccaccgccgc cttctatgaa aggttgggct tcggaatcgt tttccgggac gccggctgga 2520
 tgatcctcca gcgcggggat ctcatgctgg agttcttcgc ccaccccttg ctttaatgag 2580
 atatgcgaga cgcctatgat cgcgatgat ttgctttcaa ttctgttgtg cacgttgtaa 2640
 aaaacctgag catgtgtagc tcagatcctt accgcgggtt tcggttcatt ctaatgaata 2700

```

tattcaccggt tactatcgta tttttatgaa taatattctc cgttcaattt actgattgta 2760
ccctactact tatatgtaca atattaaaat gaaaacaata tattgtgctg aatagggttta 2820
tagcgacatc tatgatagag cgccacaata acaaacaatt gcgtttttatt attacaaaac 2880
caatttttaa aaaagcggca gaaccggtca aacctaaaag actgattaca taaatcttat 2940
tcaaatttca aaaggcccca ggggctagta tctacgacac accgagcggc gaactaataa 3000
cgttcactga aggggaactcc ggttccccgc cggcgcgcat gggtgagatt ccttgaagtt 3060
gagtattggc cgtccgctct accgaaagtt acgggcacca ttcaaccggg tccagcacgg 3120
cggccgggta accgacttgc tgccccgaga attatgcagc attttttttg tgtatgtggg 3180
ccctgtacag cggccgcggt aacgcgtata ctctagagcg atcgccatgg agccatttac 3240
aattgaatat atcctgccgc cg 3262

```

```

<210> 6
<211> 5345
<212> DNA
<213> Artificial

```

```

<220>
<223> T-DNA of pTTA82 (repair DNA)

```

```

<220>
<221> misc_feature
<222> (1)..(25)
<223> right T-DNA border sequence

```

```

<220>
<221> misc_feature
<222> (26)..(62)
<223> synthetic polylinker sequence

```

```

<220>
<221> misc_feature
<222> (63)..(578)
<223> bar 3' deleted (complement)

```

```

<220>
<221> misc_feature
<222> (579)..(603)
<223> synthetic polylinker sequence

```

```

<220>
<221> misc_feature
<222> (604)..(616)

```


<223> partial I-SceI site

<220>

<221> misc_feature

<222> (617)..(1429)

<223> P35S3 (complement)

<220>

<221> misc_feature

<222> (1430)..(1438)

<223> partial I-SceI site

<220>

<221> misc_feature

<222> (1460)..(1663)

<223> 3' gene 7

<220>

<221> misc_feature

<222> (1664)..(1782)

<223> synthetic polylinker sequence

<220>

<221> misc_feature

<222> (1783)..(2069)

<223> promoter of the nopaline synthetase gene

<220>

<221> misc_feature

<222> (2070)..(2082)

<223> synthetic polylinker sequence

<220>

<221> misc_feature

<222> (2083)..(2886)

<223> nptII

<220>

<221> misc_feature

<222> (2887)..(3059)

<223> 3' neo

<220>

<221> misc_feature

<222> (3060)..(3675)

<223> 3' ocs

<220>
 <221> misc_feature
 <222> (3676)..(3731)
 <223> synthetic polylinker sequence

<220>
 <221> misc_feature
 <222> (3732)..(4246)
 <223> P35S2

<220>
 <221> misc_feature
 <222> (4247)..(4289)
 <223> Ats1BL

<220>
 <221> misc_feature
 <222> (4290)..(4322)
 <223> NLS

<220>
 <221> misc_feature
 <222> (4323)..(5023)
 <223> I-SceI defective

<220>
 <221> misc_feature
 <222> (5024)..(5260)
 <223> 3' 35S

<220>
 <221> misc_feature
 <222> (5261)..(5317)
 <223> synthetic polylinker sequence

<220>
 <221> misc_feature
 <222> (5318)..(5345)
 <223> left T-DNA border sequence

<400> 6
 aattacaacg gtatatatcc tgccagtact cgcccgtcga cctgcaggca attggtacga 60
 tcctagacgc gtgagatcag atcctgccag aaaccacagt catgcaggtt cccgtgcttg 120
 aagccggccg cccgcagcat gccgcggggg gcatatccga gcgcctcgtg catgcgcacg 180
 ctcgggtcgt tgggcagccc gatgacagcg accacgctct tgaagccctg tgccctccagg 240

gacttcagca ggtgggtgta gagcgtggag cccagtcccg tccgctggtg gcggggggag	300
acgtacacgg tcgactcggc cgtccagtcg taggcgttgc gtgccttcca ggggcccgcg	360
taggcgatgc cggcgacctc gccgtccacc tcggcgacga gccagggata gcgctcccgc	420
agacggacga ggtcgtccgt ccaactcctgc ggttctctgc gctcggtagc gaagttgacc	480
gtgcttgtct cgatgtagtg gttgacgatg gtgcagaccg ccggcatgtc cgcctcggtg	540
gcacggcgga tgtcggccgg gcgtcgttct ggggccatgg ttatagagag agagatagat	600
ttaattacc tgttattaga gagagactgg tgatttcagc gtgtcctctc caaatgaaat	660
gaacttcctt atatagagga agggctctgc gaaggatagt gggattgtgc gtcacccctt	720
acgtcagtg agatgtcaca tcaatccact tgctttgaag acgtggttgg aacgtcttct	780
ttttccacga tgctcctcgt ggggtgggggt ccatctttgg gaccactgtc ggcagaggca	840
tcttgaatga tagcctttcc tttatcgcaa tgatggcatt tgtaggagcc accttccttt	900
tctactgtcc tttcgatgaa gtgacagata gctgggcaat ggaatccgag gaggtttccc	960
gaaattatcc tttgttgaaa agtctcaata gccctttggt cttctgagac tgtatctttg	1020
acatttttg agtagaccag agtgtcgtgc tccaccatgt tgacgaagat tttcttcttg	1080
tcattgagtc gtaaaagact ctgtatgaac tgttcgccag tcttcacggc gagttctggt	1140
agatcctcga tttgaatctt agactccatg catggcctta gattcagtag gaactacctt	1200
tttagagact ccaatctcta ttacttgcct tggtttatga agcaagcctt gaatcgtcca	1260
tactggaata gtacttctga tcttgagaaa tatgtctttc tctgtgttct tgatgcaatt	1320
agtcctgaat cttttgactg catctttaac cttcttggga aggtatttga tctcctggag	1380
attgttactc gggtagatcg tcttgatgag acctgctgcg taggaacgct tatccctagg	1440
ccgctgtaca gggcccgga tcttgaaaga aatatagttt aaatatttat tgataaaata	1500
acaagtcagg tatttatagtc caagcaaaaa cataaattta ttgatgcaag tttaaattca	1560
gaaatatttc aataactgat tatatcagct ggtacattgc cgtagatgaa agactgagtg	1620
cgatattatg tgtaatacat aaattgatga tatagctagc ttaggcgcgc catagatccc	1680
gtcaattctc actcattagg caccocaggc tttacacttt atgcttccgg ctctgataat	1740
gtgtggaatt gtgagcggat aacaatttca cacaggaaac aggatcatga gcggagaatt	1800
aagggagtca cgttatgacc cccgccgatg acgcgggaca agccgtttta cgtttggaac	1860
tgacagaacc gcaacgattg aaggagccac tcagccgcgg gtttctggag tttaatgagc	1920
taagcacata cgtcagaaac cattattgcg cgttcaaaag tcgcctaagg tcactatcag	1980

ctagcaaata tttcttgtca aaaatgctcc actgacgttc cataaattcc cctcgggtatc	2040
caattagagt ctcatattca ctctcaatca aagatccggc ccatgatcat gtggattgaa	2100
caagatggat tgcacgcagg ttctccggcc gcttggtggtg agaggctatt cggctatgac	2160
tgggcacaac agacaatcgg ctgctctgat gccgccgtgt tccggctgtc agcgcagggg	2220
cggccgggttc tttttgtcaa gaccgacctg tccgggtgcc tgaatgaact gcaggacgag	2280
gcagcgcggc tatcgtggct ggccacgacg ggcgttcctt gcgcagctgt gctcgacgtt	2340
gtcactgaag cgggaaggga ctggctgcta ttgggcgaag tgccggggca ggatctcctg	2400
tcatctcacc ttgctcctgc cgagaaagta tccatcatgg ctgatgcaat gcggcggctg	2460
catacgcttg atccggctac ctgcccattc gaccaccaag cgaaacatcg catcgagcga	2520
gcacgtactc ggatggaagc cggctctgtc gatcaggatg atctggacga agagcatcag	2580
gggctcgcgc cagccgaact gttcgccagg ctcaaggcgc gcatgccga cggcgaggat	2640
ctcgtcgtga cccatggcga tgcttgcctg ccgaatatca tggtggaata tggccgcttt	2700
tctggattca tcgactgtgg ccggctgggt gtggcggacc gctatcagga catagcgttg	2760
gctacccgtg atattgctga agagcttggc ggcgaatggg ctgaccgctt cctcgtgctt	2820
tacggtatcg ccgctcccga ttgcgacgc atcgcccttct atcgcccttct tgacgagttc	2880
ttctgagcgg gactctgggg ttcgaaatga ccgaccaagc gacgcccac ctgccatcac	2940
gagatttcga ttccaccgcc gccttctatg aaagggttggg cttcggaatc gttttccggg	3000
acgccggctg gatgatcctc cagcgcgggg atctcatgct ggagttcttc gccaccccc	3060
tgctttaatg agatatgcga gacgcctatg atcgcatgat atttgctttc aattctgttg	3120
tgcacgttgt aaaaaacctg agcatgtgta gctcagatcc ttaccgcggg tttcggttca	3180
ttctaataa tatatcacc gttactatcg ttttttatg aataatatc tccgttcaat	3240
ttactgattg taccctacta cttatatgta caatattaaa atgaaaacaa tatattgtgc	3300
tgaatagggt tatagcgaca tctatgatag agcgcacaaa taacaaacaa ttgcgtttta	3360
ttattaacaaa tccaatttta aaaaaagcgg cagaaccggg caaacctaaa agactgatta	3420
cataaatctt attcaaattt caaaaggccc caggggctag tatctacgac acaccgagcg	3480
gcgaactaat aacgttcact gaagggaact ccggttcccc gccggcgcgc atgggtgaga	3540
ttccttgaag ttgagtattg gccgtccgct ctaccgaaag ttacgggcac cattcaacc	3600
ggtccagcac ggcgccggg taaccgactt gctgccccga gaattatgca gcattttttt	3660

ggtgtatgtg ggccctgtac agcggccgcg ttaacgcgta tactctagta tgcaccatac 3720
 atggagtcaa aaattcagat cgaggatcta acagaactcg ccgtgaagac tggcgaacag 3780
 ttcatacaga gtcttttacg actcaatgac aagaagaaaa tcttcgtcaa catggtggag 3840
 cacgacactc tcgtctactc caagaatatc aaagatacag tctcagaaga ccaaagggct 3900
 attgagactt ttcaacaaag ggtaatatcg ggaaacctcc tcggattcca ttgccagct 3960
 atctgtcact tcatcaaaag gacagtagaa aaggaagggtg gcacctaaa atgccatcat 4020
 tgcgataaag gaaaggctat cgttcaagat gcctctgccg acagtgggtcc caaagatgga 4080
 cccccacca cgaggagcat cgtggaaaaa gaagacgttc caaccacgtc ttcaaagcaa 4140
 gtggattgat gtgatatctc cactgacgta agggatgacg cacaatccca ctatccttcg 4200
 caagaccctt cctctatata aggaagttca tttcatittg agaggactcg agaattaagc 4260
 aaaagaagaa gaagaagaag tccaaaacca tggctaaacc cccaagaag aagcgcaagg 4320
 ttaacatcaa aaaaaaccag gtaatgaacc tgggtccgaa ctctaaactg ctgaaagaat 4380
 acaaatccca gctgatcgaa ctgaacatcg aacagttcga agcaggtatc ggtctgatcc 4440
 tgggtgatgc ttacatccgt tctcgtgatg aaggtaaaac ctactgtatg cagttcgagt 4500
 ggaaaaacaa agcatacatg gaccacgtat gtctgctgta cgatcagtggt gtactgtccc 4560
 cgccgcacaa aaaagaacgt gttaaccacc tgggtaacct ggtaatcacc tggggcgccc 4620
 agactttcaa acaccaagct ttcaacaaac tggctaacct gttcatcggt aacaacaaaa 4680
 aaaccatccc gaacaacctg gttgaaaact acctgacccc gatgtctctg gcatactggt 4740
 tcatggatga tgggtggtaaa tgggattaca acaaaaactc taccaacaaa gtattgtact 4800
 gaacaccag tctttcactt tcgaagaagt agaatacctg gttaagggtc tgcgtaacaa 4860
 attccaactg aactgttacg taaaaatcaa caaaaacaaa ccgatcatct acatcgattc 4920
 tatgtcttac ctgatcttct acaacctgat caaacctgac ctgatccgc agatgatgta 4980
 caaactgccg aacactatct cctccgaaac tttcctgaaa tagggctagc aagcttggac 5040
 acgctgaaat caccagtctc tctctacaaa tctatctctc tctattttct ccataataat 5100
 gtgtgagtag ttcccagata aggaattag ggttcctata gggtttcgct catgtgttga 5160
 gcatataaga aaccttagt atgtatttgt atttgtaaaa tacttctatc aataaaattt 5220
 ctaattccta aaacaaaaat ccagtactaa aatccagatc atgcatggta cagcggccgc 5280
 gttaacgcgt atactctaga gcgatcgcca tggagccatt tacaattgaa tatatcctgc 5340
 cgccg 5345

<210> 7
 <211> 4066
 <212> DNA
 <213> Artificial

<220>
 <223> pCV78

<220>
 <221> misc_feature
 <222> (234)..(763)
 <223> P35S2 promoter

<220>
 <221> misc_feature
 <222> (764)..(805)
 <223> Atslb'

<220>
 <221> misc_feature
 <222> (808)..(839)
 <223> nuclear localization signal

<220>
 <221> misc_feature
 <222> (840)..(1541)
 <223> I-SceI synthetic

<220>
 <221> misc_feature
 <222> (1544)..(1792)
 <223> 3' 35S

<220>
 <221> misc_feature
 <222> (3006)..(3886)
 <223> Ampicillin resistance (complement)

<400> 7
 tcgcgcggttt cggtgatgac ggtgaaaacc tctgacacat gcagctcccg gagacggtca 60
 cagcttgtct gtaagcggat gccgggagca gacaagcccg tcagggcgcg tcagcgggtg 120
 ttggcgggtg tcggggctgg cttactatg cggcatcaga gcagattgta ctgagagtgc 180
 accatacctg caggcaattg gtacctacgt atgcatggcg cgccatatgc accatacatg 240
 gagtcaaaaa ttcagatcga ggatctaaca gaactcgccg tgaagactgg cgaacagttc 300

atacagagtc ttttacgact caatgacaag aagaaaatct tcgtcaacat ggtggagcac	360
gacactctcg tctactccaa gaatatcaaa gatacagtct cagaagacca aagggctatt	420
gagacttttc aacaaagggg aatatcgga aacctcctcg gattccattg cccagctatc	480
tgtcacttca tcaaaaggac agtagaaaag gaaggtggca cctacaaatg ccatcattgc	540
gataaaggaa aggctatcgt tcaagatgcc tctgccgaca gtggtcccaa agatggaccc	600
ccaccacga ggagcatcgt ggaaaaagaa gacgttccaa ccacgtcttc aaagcaagtg	660
gattgatgtg atatctccac tgacgtaagg gatgacgcac aatcccacta tccttcgcaa	720
gacccttcct ctatataagg aagttcatth catthtgaga ggactcgaga attaaagcaa	780
agaagaagaa gaagaagtcc aaaacctatg ccaagcctcc caagaagaag cgcaaagtga	840
acatcaagaa gaaccaggtg atgaacctgg gacctaacag caagctcctg aaggagtaca	900
agagccagct gatcgaaactg aacatcgagc agttcgaagc tggcatcggc ctgatcctgg	960
gcgatgccta catcagatcc cgggacgaag gcaagaccta ctgcatgcag ttcgagtgg	1020
agaacaaggc ctacatggac cacgtgtgtc tgctgtacga ccagtgggtc ctgagccctc	1080
ctcacaagaa ggagcgcgtg aacctctgg gcaacctcgt gatcacctgg ggagcccaga	1140
ccttcaagca ccaggccttc aacaagctgg ccaacctgtt catcgtgaac aacaagaaga	1200
ccatcccaa caacctcgtg gagaactacc tctctccat gagcctggcc tactggttca	1260
tggacgacgg aggcaagtgg gactacaaca agaacagcac caacaagtca attgtgctga	1320
acacccaaag cttcaccttc gaagaagtgg agtacctcgt caagggcctg cgcaacaagt	1380
tccagctgaa ctgctacgtg aagatcaaca agaacaagcc tatcatctac atcgacagca	1440
tgagctacct gatcttctac aacctgatca agccatacct gatccctcag atgatgtaca	1500
agctgccccaa caccatcagc agcgagacct tcctgaagtg aggctagcaa gcttgacac	1560
gctgaaatca ccagtctctc tctacaaatc tatctctctc tattttctcc ataataatgt	1620
gtgagtagtt ccagataag ggaattaggg ttcctatagg gtttcgctca tgtgttgagc	1680
atataagaaa cccttagtat gtatttgtat ttgtaaaata cttctatcaa taaaatttct	1740
aattcctaaa accaaaatcc agtactaaaa tccagatcat gcatggtaca gcggccgcgt	1800
taacgcgtat actctagagc gatcgcaagc ttggcgtaat catggtcata gctgtttcct	1860
gtgtgaaatt gttatccgct cacaattcca cacaacatac gagccggaag cataaagtgt	1920
aaagcctggg gtgcctaag agtgagctaa ctcacattaa ttgcgttgcg ctcactgccc	1980
gctttccagt cgggaaacct gtcgtgccag ctgcattaat gaatcgcca acgcgcgggg	2040

agaggcggtt tgcgtattgg gcgctcttcc gcttcctcgc tcaactgactc gctgcgctcg 2100
 gtcgttcggc tgcggcgagc ggtatcagct cactcaaagg cggtaatacg gttatccaca 2160
 gaatcagggg ataacgcagg aaagaacatg tgagcaaaag gccagcaaaa ggccaggaac 2220
 cgtaaaaagg ccgcgttgct ggcgtttttc cataggctcc gccccctga cgagcatcac 2280
 aaaaatcgac gctcaagtca gaggtggcga aacccgacag gactataaag ataccaggcg 2340
 tttccccctg gaagctccct cgtgcgctct cctgttccga ccctgccgct taccggatac 2400
 ctgtccgcct ttctcccttc gggaagcgtg gcgctttctc aaagctcacg ctgtaggat 2460
 ctcaattcgg ttaggtcgt tgcctccaag ctgggctgtg tgcacgaacc ccccggtcag 2520
 cccgaccgct gcgccttata cggtaactat cgtcttgagt ccaaccgggt aagacacgac 2580
 ttatcgccac tggcagcagc cactggtaac aggattagca gagcgaggta ttagggcggt 2640
 gctacagagt tcttgaagtg gtggcctaac tacggctaca ctagaagaac agtatttggt 2700
 atctgcgctc tgctgaagcc agttaccttc ggaaaaagag ttggtagctc ttgatccggc 2760
 aaacaaacca ccgctggtag cgggtggtttt tttgtttgca agcagcagat tacgcgcaga 2820
 aaaaaaggat ctcaagaaga tcctttgatc ttttctacgg ggtctgacgc tcagtggaac 2880
 gaaaactcac gttaagggat tttggtcatg agattatcaa aaaggatctt cacctagatc 2940
 cttttaaatt aaaaatgaag ttttaaatac atctaaagta tataatgagta aacttggtct 3000
 gacagttacc aatgcttaat cagtgaggca cctatctcag cgatctgtct atttcgttca 3060
 tccatagttg cctgactccc cgtcgtgtag ataactacga tacgggaggg cttaccatct 3120
 ggccccagtg ctgcaatgat accgcgagac ccacgctcac cggctccaga tttatcagca 3180
 ataaaccagc cagccggaag ggccgagcgc agaagtggtc ctgcaacttt atccgcctcc 3240
 atccagtcta ttaattgttg ccgggaagct agagtaagta gttcgccagt taatagtttg 3300
 cgcaacgttg ttgccattgc tacaggcatc gtggtgtcac gctcgtcgtt tggatatggc 3360
 tcattcagct ccggttccca acgatcaagg cgagttacat gatccccat gttgtgcaaa 3420
 aaagcgggta gctccttcgg tcctccgata gttgtcagaa gtaagttggc cgcagtgtta 3480
 tcaactcatg ttatggcagc actgcataat tctcttactg tcatgccatc cgtaagatgc 3540
 ttttctgtga ctggtgagta ctcaaccaag tcattctgag aatagtgtat gcggcgaccg 3600
 agttgctctt gcccgcgctc aatacgggat aataccgcgc cacatagcag aactttaaaa 3660
 gtgctcatca ttggaaaacg ttcttcgggg cgaaaactct caaggatctt accgctgttg 3720

agatccagtt cgatgtaacc cactcgtgca cccaactgat cttcagcatc ttttactttc 3780
accagcgttt ctgggtgagc aaaaacagga aggcaaatg ccgcaaaaaa gggaataagg 3840
gcgacacgga aatgttgaat actcatactc ttcctttttc aatattattg aagcatttat 3900
cagggttatt gtctcatgag cggatacata tttgaatgta tttagaaaaa taaacaaata 3960
ggggttccgc gcacatttcc ccgaaaagtg ccacctgacg tctaagaaac cattattatc 4020
atgacattaa cctataaaaa taggcgtatc acgaggccct ttcgtc 4066